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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,709	12/12/2001	Alan Glen Solheim	GSH 08-893504	2300

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EXAMINER	
PAYNE, DAVID C	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/021,709	SOLHEIM ET AL.	
	Examiner	Art Unit	
	David C. Payne	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 December 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2 and 4 recites the limitation "A method as claimed in claim 2, " in the body of the claim. There is insufficient antecedent basis for this limitation in the claim.

DETAILED ACTION

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3, 5-7, 13, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Al-Salameh et al. US 6,317,231 B1 (Al-Salameh).

Re claim 1,

Al-Salameh disclosed

A method for evaluating connections in an agile network comprising: (a) for a switching node (200 of Figure 2, e.g., col./line: 3/33-40) of said agile network.

Al-Salameh does not explicitly disclose selecting a plurality of paths available between said switching node and all remaining nodes of said agile network; (b) for an available path,

selecting a plurality of adequate wavelengths according to a wavelength performance parameter; (c) for each adequate wavelength, establishing said test connection along said path; and (d) at preset intervals, repeating step (c) for all adequate wavelengths, repeating steps (b) and (c) for all available paths, and repeating steps (a), (b) and (c) for all nodes of said agile network.

Rather, Al-Salameh disclosed selecting available paths between all the nodes and the Network Control Element (NCE) (240 of Figure 2) from which to carry out monitoring of paths. Al-Salameh disclosed two specific types of tests: the first) a specific wavelength λ_0 (e.g., col./line: 6/60-67, 7/1-7) is used to carry a pilot tone test between the NCE and every node, and the second alternative test) where passive monitoring over all the channels is between individual nodes and the NCE (e.g., col./line: 7/55-67). This second type of test in particular functions in a similar fashion to the applicant's invention. As such the primary difference between the prior art and the applicant's invention is that Al-Salameh establishes pair wise tests between the node element and the NCE over each channel (wavelength) according to a wavelength performance parameter, calculated OSNR (e.g., col./line: 7/45-50) rather than pair wise tests between a node and all the remaining nodes as claimed. However, given that a subset of paths and wavelengths are tested in Al-Salameh, it would have been obvious to one of ordinary skill in the art at the time of invention to perform the pairwise testing method as claimed by the applicant. One is motivated as such since the testing of every pair wise path and wavelength between nodes is well known in the art to be an exhaustive test of every path possibility although it takes longer to complete. The Al-Salameh procedure on the other hand at the expense of completeness only ensures possible at

least one possible path exists between every node since every node is reachable by the network element.

Re claim 3,

Al-Salameh disclosed the method performed with live traffic over said network (in-service (IS) e.g., col./line: 6/25-30).

Re claim 5,

Al-Salameh invention as discussed, does not explicitly disclose

wherein said step (c) comprises providing an alarm whenever said test connection cannot be established along said path. Rather, Al-Salameh describes the steps of indicating and reporting service degradation and failure (see e.g., col./line: 7/63-67, steps 325, 345, 365, 388 and 392 in Figure 3). It would have been obvious to one of ordinary skill in the art at the time of invention that reporting failures to the NCE, as does Al-Salameh is equivalent to sending an alarm since alarm is merely a signal of a fault condition to a higher administrative system or user. Hereinafter, this reporting mechanism will be referred to as an alarm for sake of brevity.

Re claims 6 and 7,

Al-Salameh disclosed

wherein said alarm identifies the location of a fault at one of an add structure of said switching node and a drop structure of said other node (see e.g., col./line: 8/1-10).

As regards claim 7, Al-Salameh also disclosed that nodes (200 of Figure 2) man contain switches (see e.g., col./line: 3/33-37).

Re claim 13,

Al-Salameh disclosed

A network and element management system (240 of Figure 2) for a wavelength switched optical network comprising: at a switching node (200 of Figure 2, e.g., col./line: 3/33-40), Al-Salameh does not disclose the wavelength exerciser (NCE (240 of Figure 2) and Optical Monitoring Unit (260 of Figure 2)) at each node as detecting a test path between said switching node and another switching node; and a call management module for setting up a connection along said test path. Rather, the tests are conducted between the NCE and each node, see discussion above. Furthermore, Al-Salameh describes the NCE as coordinating the testing of each OMU (e.g., col./line: 6/30-35), which performs the function that the applicant describes as a call manager. Therefore, it would have been obvious to an artisan of ordinary skilled in the art to conduct the testing between a switching node and another switching node in order to conduct a more efficient test for reachability of each node in the network, see discussion with regard to claim 1 above.

Re claim 17,

Al-Salameh disclosed the NCE "wavelength exerciser" (240 of Figure 2) his has the function of setting up the "test calls" as claimed by the applicant. Al-Salameh disclosed the method performed with live traffic over said network (in-service (IS) e.g., col./line: 6/25-30).

However Al-Salameh does not disclose that the NCE sets up both the test calls and the live traffic. However, it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate these two function in the same network element given that networks typically have a central Operations, Administration, Maintenance and Provisioning Facility that both manages live traffic calls (provisioning) an performs tests (maintenance) on the network. It is more cost effective in terms of both capital and labor to centralize functions within the same network elements.

Re claim 18,

Al-Salameh disclosed the

A wavelength exerciser ((NCE (240 of Figure 2) and Optical Monitoring Unit (260 of Figure 2)) for an agile network, comprising: a path selector (NCE (240 of Figure 2)) for selecting a test path between a source node (NCE (240 of Figure 2)) and a destination node (200 of Figure 2); a fault finder (OA 284 of Figure 2, step 384 of Figure 3) for detecting a fault whenever said test connection fails (e.g., col./line: 8/5-10); and a test connection controller (NCE (240 of Figure 2, e.g., col./line: 6/30-35) for controlling operation of said path selector, said wavelength assignment module and said fault finder.

Al-Salameh does not disclose the wavelength assignment module (NCE and OMU) as assigning successively a plurality of wavelengths to said test path for establishing a test connection along said test path. Al-Salameh merely disclosed that the OA monitors the spectrum of each channel (see e.g., step 384 of Figure 3). However, it would have been obvious to one of ordinary skill in the art at the time of invention to successively test each

wavelength. One is motivated as such since, with the exception of expensive parallel processing, the typical hardware configuration is a single processor system that sequentially performs operations and must necessarily complete an operation before proceeding to the next operation, or wavelength testing in this case.

5. Claims 8, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Al-Salameh et al. US 6,317,231 B1 (Al-Salameh) in view of Joline et al. US 6,005,696 (Joline).

Re claim 8,

Al-Salameh disclosed the method as discussed above in addition to measuring a performance parameter of said path (for e.g., OSNR or power see step 375 of Figure 3).

Al-Salameh does not disclose storing said performance parameter in a measurement database, whenever said test connection is established along said available path.

Joline disclosed storing test parameters in a database (see e.g., col./line: 11/29-35).

It would have been obvious to one of ordinary skill in the art at the time of invention to store performance parameters in a measurement database. One is motivated as such so that a permanent record of the ongoing network performance can be made for later analysis.

Re claims 11 and 12,

The modified invention of Al-Salameh and Joline disclosed a target parameter for one or more optical devices based on a performance parameter of either power (PWR_CHK_THRESH) or OSNR (see Al-Salameh e.g., col./line: 7/25-30, 7/45-50). The modified invention is not explicit regarding the whether or not the target parameter is fixed

or can be set. It would have been obvious to one of ordinary skill in the art at the time of invention to set the target threshold or parameter in some case and use fixed values in other instances. One is motivated as such since the operator may wish to set the threshold value of a performance target when the tolerance of a performance value is allowed to vary over time. For example, a higher OSNR may be allowed over certain links that carry less sensitive traffic but may need to be set at much tighter limits where certain customer service level agreements dictate a higher quality of service. In addition, certain parameters such as power may be set at fixed values given that levels above certain thresholds may create damage to optical components that would never be acceptable.

6. Claims 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Al-Salameh et al. US 6,317,231 B1 (Al-Salameh) and Joline et al. US 6,005,696 (Joline) as applied to claim 8 above, an in further view of Khaleghi US 6,069,718 (Khaleghi).

   Re claim 9,

   The modified invention of Al-Salameh and Joline disclosed the method as discussed above, but nodes not disclosed further comprising calibrating a Q calculator based on said measured performance parameter. Khaleghi disclosed a method of determining (calibrating) a Q of a transmission path (see e.g., col./line: 3/14-16, 7/19-25). It would have been obvious to one of ordinary skill in the art at the time of invention to calibrate a Q value for the network links in modified invention of Al-Salameh and Joline. One is motivated as such since the Q factor is a measure of the true signal quality (property of the signal), which provides a simple and reliable method of determining a distortion penalty measurement which separates the

contribution of distortion from the contribution of noise in the BER (see e.g., col./line: 3/24-30) and is less time consuming that BER tests (see e.g., col./line: 1/65-65, 2/1).

7. Claims 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Al-Salameh et al. US 6,317,231 B1 (Al-Salameh) in view of Khaleghi US 6,069,718 (Khaleghi).

Re claim 10,

Al-Salameh disclosed the method as discussed above, but does not disclose adjusting a tunable parameter of an optical device of said available path based on said performance parameter. Khaleghi disclosed adjusting a variable optical attenuator (VOA) (2 of Figure 1A) based on an output power level (7 of Figure 1A). It would have been obvious to one of ordinary skill in the art at the time of invention to tune an optical device parameter based on a performance parameter in the Al-Salameh invention. One is motivated as such since tuning an optical device parameter as a function of a measured performance value constructs a closed loop feedback path which can then track and eliminate the source of faults in a network by reducing an error deviation between target and actual performance values.

Re claim 14,

Al-Salameh disclosed the method as discussed above, but does not disclose determining a Q calculator based on said test connection. Khaleghi disclosed a method of determining a Q of a transmission path (see e.g., col./line: 3/14-16, 7/19-25). It would have been obvious to one of ordinary skill in the art at the time of invention to determine a Q value for the network links in the Al-Salameh invention. One is motivated as such since the Q factor is a measure

of the true signal quality (property of the signal), which provides a simple and reliable method of determining a distortion penalty measurement which separates the contribution of distortion from the contribution of noise in the BER (see e.g., col./line: 3/24-30) and is less time consuming that BER tests (see e.g., col./line: 1/65-65, 2/1).

8. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Al-Salameh et al. US 6,317,231 B1 (Al-Salameh) and Khaleghi US 6,069,718 (Khaleghi) as applied to claim 14 above, and in further view of Joline et al. US 6,005,696 (Joline).

   Re claims 15 and 16,

   The modified invention of Al-Salameh and Khaleghi disclosed the method as discussed above, but does not disclose storing said Q factor of said test connection. Joline disclosed storing test parameters in a database (see e.g., col./line: 11/29-35).

   It would have been obvious to one of ordinary skill in the art at the time of invention to store the Q factor in a database. One is motivated as such so that a permanent record of the ongoing network performance can be made for later analysis.

   With respect to claim 16, each node in Al-Salameh is described as having the ability to collect performance data (see e.g., col./line: 7/55-60).

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Payne whose telephone number is (571) 272-3024. The examiner can normally be reached on M-F, 7a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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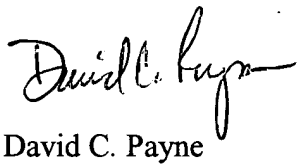

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